



Retaining Compound, Anaerobic, High Strength, High Temperature, Medium Viscosity

1 Scope

1.1 Material Description. A green anaerobic dimethyl acrylate polyester resin base liquid compound that solidifies by polymerization (not by solvent evaporation) into a tough plastic when confined between closely fitted metal surfaces. This material may be used on slightly oiled cadmium and zinc plated, black oxide, and phosphate and oil coated parts and still obtain satisfactory properties. For maximum properties, parts must be cleaned.

1.2 Symbols. Not applicable.

1.3 Applicability. This material is intended for supplementing press fits or bonding slip fitted cylindrical parts. Material shall be capable of obtaining full retaining and/or locking strength with gap thickness to 0.10 mm diametral and seal with gap thicknesses to 0.25 mm using the ASTM D4562 or ISO 10123 static shear strength pin and collar tests. The material curing time may be substantially reduced with accelerators or heat. This is not to be used for pressing fit cup plugs.

1.3.1 Temperature Use Range. It is best suited for application where temperatures range from -54 °C to 200 °C. Low temperature performance is based on maintaining 50% or more of the original minimum static shear strength after 2 h exposure (measure in 30 s or less). The low temperature test is not required for this standard. The upper temperature limit is based on Table 3 aging requirements.

1.4 Remarks. The words must, shall or will (as used in this document) equate to a mandatory requirement.

1.4.1 Application of the product outside its use category (retaining) as defined by GMW16800, is strictly prohibited.

1.4.2 Preferential bonding to one surface (adhesive failure) can be an indicator of surface contamination or inactivity if the metal is different.

1.4.3 Use of automated application dispensing system equipment designed for this product provides a measured uniform liquid coating. Contact the product manufacturer for equipment recommendations.

1.4.4 Test Result Perspective. Steel Pin and Collar forms are used to establish and compare diametral gap limit, cure speed and strength between retaining compounds. Test this product on end use surfaces as the metal reactivity (1.4.6) and production surface cleanliness affecting cure speed and strength to gap may be different from the values in this specification.

1.4.5 Container Size. No anaerobic container is more than 1 L because pressure on the product in the container can cause curing. Do not transfer anaerobic into an unauthorized or contaminated container.

1.4.6 Reactive Surfaces. Anaerobics bond with active metal ions and cure in the absence of air. The following are very reactive; brass, copper, manganese, followed by active; aluminum, bronze, iron, nickel and steel. Inactive metals are anodized aluminum, cadmium, chrome finishes, Inconel, magnesium, plated parts, galvanized steel, stainless steel, titanium and zinc. Small percentages of copper or other active metals are added to inactive compositions to promote anaerobic curing. Borate and nitrate cleaning residues will retard bonding and cure.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

ASTM A108	ASTM D1084	ASTM D3828	ISO 3675
ASTM B221	ASTM D1141	ASTM D4562	ISO 3679
ASTM D287	ASTM D1298	ASTM D5363	ISO 10123

2.2 GM Standards/Specifications.

GMW3059	GMW15735	GMW17205	GMW17332
GMW14270	GMW16800		

2.3 Additional References.

- Brookfield Dial Reading Viscosity equipment available at www.brookfieldengineering.com/products/viscometers/laboratory-viscometers/dial-reading-viscometer
- Leadership, Performance, Sustainability (LPS); LPS Precision Clean available at www.lpslabs.com/product-details/595

3 Requirements

3.1 This material to be tested per the methods outlined in GMW16800, Retaining, Appendix A, Table A1. This includes test frequency requirements to be reported to the Powertrain Integration and Sealant Specialist Team based on timing from the initial product approval date (mm/yr).

3.1.1 Minimum Table Data Requirements. Table 1 and Table 2 are based on the minimum number of batches described in GMW16800, 5.3.2 Initial Approval. Conformance to Table 3 and storage/stability is based on one batch.

Table 1: Initial Qualification Requirements

Properties	Test Method	Target Values
Unpolymerized		
Flash point	ASTM D3828, ISO 3679	118 °C minimum
Specific gravity	ASTM D287 or ASTM D1298 hydrometer or ISO 3675	1.10 ± 0.04
Storage/Stability viscosity increase	GMW15735, Cycle B GMW16800	Meets all Table requirements 50% maximum
Toxicity/Health and Safety	GMW3059	
Polymerized		
Static Shear Strength , Pin and Collar, 35 °C, Steel (1008/1010 per ASTM A108), Aluminum (ASTM B221, A380)	ISO 10123	20 MPa minimum 19 MPa minimum
Fluid Resistance , Pin and Collar Shear, Aluminum (ASTM B221, A380) 168 h at 150 ° in GMW17332, 0W20 168 h at 23 °C in synthetic sea water (SSWAT) (ASTM D1141)	GMW16800 GMW16800	30 MPa minimum 20 MPa minimum
Corrosion to Metal (aluminum and steel)	GMW16800	9 or 10 scale rating